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Patent claims

- 5 1. A method for heating up the intake air of an
internal combustion engine (8) during the preglow
phase or start-up phase by means of at least one
electrically heatable heating element (12) in the
10 intake line (10) of the internal combustion
engine, the heating power being controlled by a
control unit (13) of the engine electronics as a
function of the operating data of the internal
combustion engine,
characterized
- 15 - in that during the preglow phase (1,2,3), the
heating element (12) is initially supplied with
full current (1) until the heating element
reaches its reference temperature and in that
after the reference temperature has been reached
20 and until the start-up phase, a post-heating
phase (2,3) begins in which the heating element
(12) is kept at a constant temperature by means
of a relatively low power,
- 25 - and in that during the start-up phase, in a
first time period (4a), the heating element (12)
is switched off, and in that in a second time
period (4b) in which the speed of the internal
combustion engine is raised to the starting
30 speed, the heating element (12) is switched on
again.
2. The method as claimed in claim 1,
characterized
in that a start-readiness phase (3), in which the
35 heating element (12) is operated at a further
reduced power, follows the post-heating phase (2).

3. The method as claimed in claim 1 or 2,
characterized
in that in a subsequent afterglow phase (5), an
afterglow at a reduced heating power is carried
5 out after the idling speed has been reached and
until an applicable engine temperature is reached.
4. The method as claimed in one of claims 1 to 3,
characterized
10 in that in the afterglow phase (5), the charge air
temperature is kept constant by means of the
heating element (12) during an increase in speed
(6).
- 15 5. The method as claimed in one of claims 1 to 3,
characterized
in that the afterglow period is determined at the
beginning of the start process as a function of
the coolant temperature or the charge air
20 temperature.
6. The method as claimed in one of claims 1 to 4,
characterized
in that the heating element is switched off in a
25 timed or temperature-controlled manner.